

BORISOV, A.V. (Leningrad, K-67, ul. Kurakina, d.1/3, pavil'on 26, kv.66)

Age features of Peyer's patches in lymphatics in man. Arkh. anat.
gist. i embr. 36 no.5:93-95 My '59. (MIRA 12:7)

1. Kafedra normal'noy anatomii (zav. - chlen-korrespondent AMN SSSR
prof. D. A. Zhdanov) Leningradskogo sanitarno-gigiyenicheskogo med-
itsinskogo instituta.

(INTESTINE, SMALL, anat. & histol.

Peyer's patches, eff. of aging (Rus))

(AGING, eff.

on Peyer's patches (Rus))

BORISOV, A.V.

Vascularization of the human mandibular nerve and its branches.
Trudy LSGMI 63:193-201 '60. (MIRA 15:1)
(TRIGEMINAL NERVE...BLOOD SUPPLY)

BALASHEV, V.N.; BORISOV, A.V.; KRAYEV, A.V.; ETINGEN, L.Ye.

Topic conference on the experimental morphology of the heart and
blood vessels. Zdrav.Tadzh. 7 no.1:47-48 Ja-F '60. (MIRA 13:5)
(CARDIOVASCULAR SYSTEM)

BORISOV, A.V.

Blood vessels and lymphatics of Meckel's diverticulum. Trudy
ISGMI 65:93-98 '61.

Relation of blood vessels and lymphatics to neural elements and
perineural spaces of the intramural vegetative nerve plexuses of
the intestines in man. Ibid.:99-108

Vascularization of the mesenteric lymphatic nodes in man.
Ibid.:120-127 (MIRA 17:4)

1. Kafedra normal'noy anatomii Leningradskogo sanitarno-gigiyeni-
cheskogo meditsinskogo instituta (zav. kafedroy - prof.
V.N.Nadezhdin).

NADEZHGIN, V.N.; BORISOV, A.V.; BALASHEV, V.N.

Problems of the anatomy of the vascular system in the transactions of the Department of Normal Anatomy of the Leningrad Medical Institute of Sanitation and Hygiene for fifty years; 1909 - 1958. Trudy LSGMI 65:5-19 '61. (MIRA 17:4)

1. Kafedra normal'noy anatomii Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.

BORISOV, A.V.; NARYADCHIKOVA, A.S.

Intraorganic lymphatic system of the male urethra. Urologia
28 no.3:30-35 '63 (MIRA 17:2)

1. Iz kafedry normal'noy anatomii (zav. - prof. V.N.Nadezhdin)
Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo institu-
ta.

AMIRKHANOVA, I.B.; BORISOV, A.V.; GVERDTSITELI, I.G.; KARAMYAN, A.T.;
KUCHEROV, R.Ya.

Evaporation coefficients of liquid C_2H_5OH , BCl_3 , BF_3 , CH_4 .
Dokl. AN SSSR 149 no.1:114-116 Mr '63. (MIRA 16:2)

1. Predstavleno akademikom N.M. Zhavoronkovym.
(Liquids) (Evaporation)

BORISOV, A.V. (Leningrad, K-67, Kurakina, d. 1/3, pavil'on 26, kv.66.)

State of the blood and lymphatic vessels of metastatic tumors of the greater omentum. Vop. onk. 9 no.10:50-58 '63.

(MIRA 17:12)

1. Kafedra normal'noy anatomii (zav. - prof. V.N.Nadezhdin) Leningrad-skogo sanitarno-gigiyenicheskogo meditsinskogo instituta.

MOROKHOV, F.A.; BORISOV, A.V. (Leningrad)

Development of congestive phenomena and their compensation in stenosis of the portal vein. Arkh. pat. no.12:62-65 '63.

(MIRA 17:11)

1. Iz kafedry patofiziologii (zav. - prof. L.R. Perel'man) i normal'noy anatomii (zav. - prof. V.N. Nadezhdin) Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.

BORISOV, A.V., inzh.; LEBEDEV, V.V., inzh.

Organization of work charts for the construction of an artificial-fiber combine. Prom. stroi. 42 no.12:23-29 D '64.

(MIRA 18:3)

1. Gosudarstvennyy institut tipovogo i eksperimental'nogo
proyektirovaniya i tekhnicheskikh issledovaniy Gosstroya SSSR.

L 4450-66

EWI(e)/EWI(m)/EPI(c)/EPI(1)/EPI(t)/EPI(b)

DIAAP/IJP(c)

JD/JW/DM

ACC NR: AF5028435

SOURCE CODE: UR/0089/65/019/001/0020/0024

AUTHOR: Amirkhanova, I. B.; Borisov, A. V.; Gverdtseteli, I. G.; Karamyan, A. T.

ORG: none

TITLE: Relative difference of vapor pressure in sup 11 BF sub 3 - sup 10 BF sub 3

SOURCE: Atomnaya energiya, v. 19, no. 1, 1965, 20-24

TOPIC TAGS: differential calculus, vapor pressure, difference method, solution property, radioisotope, boron, fluoride, radiation chemistry

ABSTRACT: The relative differences of vapor pressures of the isotopic molecules ¹¹BF₃ and ¹⁰BF₃ at temperatures of 147 to 247.7°K were measured by a differential method. The coefficient of enrichment is reduced from 20×10^{-3} (147.0°K) to 1.1×10^{-3} (247.7°K). Within the limits of error of the experiment (2 to 4%), the liquids of the ¹¹BF₃-¹⁰BF₃ solutions are ideal. In the measured interval of temperatures corrections to the coefficient of enrichment associated with the nonideality of the gas phase are calculated. Data obtained in the presence of other parameters of the process of fractionation of BF₃ (the height of the theoretical plate, the throughput of the adapter, etc.) allow the efficiency of the process of separation of ¹¹BF₃ and ¹⁰BF₃ at various pressures to be calculated. G. L. Kakuliya participated in taking the measurements. The mass spectrometer measurements were made by L. I. Chernovaya under the direction of K. G. Ordzhonikidze. The authors express thanks to Yu. V. Nikolayev.

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UDC: 621.039.332/546.27

L 4450-66

ACC NR: AP5028435

V. V. Boyko, and N. Ye. Menabde for participation in discussion of the work. Orig. art.
has: 4 figures, 4 formulas. NA

SUB CODE: NP, TD, GC, MA / SUBM DATE: 01Jul64 / ORIG REF: 008 / OTH REF: 003

PC

Card 2/2

BORISOV, A.V., inzh.; ISHUNIN, N.N.

Operational control of the construction of an industrial
complex by the graphic work schedule. Prom. stroi. 43 no.10:
4-7 '65. (MIRA 18:11)

AMIRKHANOVA, I.B.; BORISOV, A.V.; GVERDTSITELI, I.G.; KARAMYAN, A.T.

Relative differences of pressures of $B^{11}F_3$ - $B^{10}F_3$ vapors. Atom.
energ. 19 no.1:20-24 J1 '65. (MIRA 18:7)

24(8) PHASE I BOOK EXPLOITATION 30V/2117
Soveshchaniya po eksperimental'noy tekhnike i metodam vysokotemperaturnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody issledovaniy pri vysokikh temperaturakh; Trudy soveshchaniya (Experimental Techniques and Methods of Investigation at High Temperatures; Trudy Konferentsii po Eksperimental'nykh Tekhnikam i Metodam Issledovaniya pri Vysokikh Temperaturakh) Moscow, AN SSSR, 1959. - 789 p. (Series of Academic Works of the USSR Academy of Sciences. Khimicheskii obozrom proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.L. Bankovits.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This collection of scientific papers is divided into six parts: 1) thermodynamic activity and kinetics of high-temperature processes 2) constitution diagram studies 3) physical properties of liquid metals and slags 4) new analytical methods and detection of pure metals 5) pyrometry, and 6) general questions. For more specific coverage, see Table of Contents.

IV. NEW METHOD OF ANALYSIS AND PRODUCTION OF PURE METALS

Men'shikov, N.I., and R.Ye. Rybchinskii. The "MAG-3" Mass Spectrometer for Continuous Analysis of Gaseous Mixtures. The MAG-3 mass spectrometer is an ionization type mass spectrometer, capable of measuring the partial pressure of the components of a gaseous mixture with a sensitivity of the order of 10^{-6} micron Hg. #41

Orlov, A.M. Methods and Apparatus for Measurement of Low Pressures. #46

Pedotov, V.P. Determination of Nitrogen in Metals and Alloys. #54

Rusorin, G.Y., and A.I. Khodov. Instrument for Rapid Determination of Hydrogen Content in Hard Steel. #61

Rylov, A.I. An Instrument of New Design for Determining the Hydrogen Content in Steel by Hot Extraction in Vacuum. The design of the instrument permits elimination of the open surface of mercury and a decrease in the actual quantity of mercury, thus lessening the danger of mercury poisoning. The temperature of the specimen can be measured continuously, permitting more uniform determinations. #65

The design of the instrument makes it possible to increase the weight of the specimen up to 35 kg, thereby increasing the accuracy of the determination. A special outlet makes possible the analysis of the extracted gas. A single determination can be completed in 30 minutes.

SOV/133-59-2-11/26

AUTHORS: Andreyev, I.A., Professor
Borisov, A.Ya., Candidate of Technical Sciences

TITLE: On the Mechanism of Action of Magnesium on Steel
(O mekhanizme vozdeystviya magniya na stal')

PERIODICAL: Stal', 1959, Nr 2, pp 131-136 (USSR)

ABSTRACT: The process of interaction of magnesium with liquid steel was investigated. It is shown that from thermodynamic considerations magnesium is a considerably stronger deoxidising agent than titanium. The solubility of magnesium in steel was determined by vacuo extraction (the apparatus used - Fig.1) at 1150°C. The results obtained (table 1) 8 to 10% of the total magnesium content of steel is in a free state, the remaining is probably present in the form of oxide. With increasing nickel content of steel the proportion of free magnesium increases. Annealing of steel specimens (3.1% Ni) for 2 hours at 1200°C removes about 2/3 of the total free magnesium present, while in specimens containing 10.1% of Ni the amount of free magnesium remained unchanged. Thus in solid solution the presence of only a thousand part percent

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SOV/133-59-2-11/26

On the Mechanism of Action of Magnesium on Steel

of magnesium can be expected. The above shown high mobility of magnesium atoms in steel at forging and thermal treatment temperatures may assist in its participation in the processes of separation of phases in solid metal e.g. carbides or sulphides with a corresponding mollifying effect. A low mean concentration of metallic magnesium in solution does not exclude the possibility of obtaining in liquid steel during its treatment with magnesium alloys of localised volumes with a considerably higher magnesium concentrations. The dependence of the magnesium (or calcium) concentration in alloys at which the magnesium vapour pressure is equal 1 atm on the content of iron was investigated. The experimental procedure is described in some detail and the results obtained are shown in Fig.2 and Tables 2 and 3. With increasing concentration of iron in magnesium (or calcium) alloys the concentration of magnesium (or calcium) at which its vapour pressure is equal 1 atm decreases; with increasing temperature magnesium vapour pressure of 1 atm is attained at its lower concentrations. On the introduction of magnesium

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SOV/133-59-2-11/26

On the Mechanism of Action of Magnesium on Steel

and calcium alloys into the liquid steel the degree of their action on metal should increase with the increase in their specific gravity which permits deeper penetration into the metal. In view of the above the influence of various alloys of magnesium on the composition and amount of non-metallic inclusions in various steels was investigated. The experimental results are given in table 4 and figure 3. It is concluded that: 1) on treatment of steel with magnesium or calcium the deoxidation processes are taking place. The degree of deoxidation depends on the duration of the action of these elements on the metal (the amount of addition); 2) a high mobility of magnesium dissolved in the metal at heat treatment temperatures was observed; 3) the solubility of magnesium in steel does not exceed a few thousandths of one percent; 4) magnesium acts primarily on non-metallic inclusions decreasing mainly the proportion of silicate inclusions in low-silicon steels and the proportion of spinels in steels containing up to 1.5% of silicon. Magnesium additions cause a diminution of inclusions. When added together with titanium, magnesium decreases

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SOV/133-59-2-11/26

On the Mechanism of Action of Magnesium on Steel

the amount and dimensions of sulphides; 5) an increased activity of magnesium alloys of a high specific gravity was established. The activity of magnesium in nickel alloys is higher than that in silicon alloys; 6) advantages of utilising magnesium and calcium in the composition of complex deoxidising agents was established. There are 3 figures, 4 tables and 6 references of which 5 are Soviet and 1 English.

Card 4/4

L 23446-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b) MJW/JD

ACCESSION NR: AT4049945

B/2723/64/000/003/0107/0118

AUTHOR: Kuslitskiy, A.B.; Babey, Yu. I.; Serebriyskiy, E.I.; Mizetskiy, V.L.;
Borisov, A. Ya.; Karpenko, G.V. (Corresponding member AN UkrSSR)

TITLE: Effect of the hardening temperature on the fatigue strength of ShKh15 steel from
electroslag and vacuum refining

SOURCE: AN UkrSSR, Fiziko-mekhanicheskiy institut, Vliyaniye rabochikh sred na
svoysta materialov, no. 3, 1964, 107-118

TOPIC TAGS: steel fatigue strength, hardening temperature, electroslag steel, vacuum
smelted steel, steel purity/ Shkh 15 steel

ABSTRACT: This study was prompted by the lack of data concerning the physical and
mechanical properties of electroslag steel (see, e.g., B. Ye. Paton, B.I. Medovar,
Yu. V. Latash, Stal', no. 11, 1962) and by the inconclusive results concerning such
properties of vacuum smelted steels (see, e.g., H. B. Nudelman, J. Sheehan, A study
of the effect of melting practice on the fatigue behavior of high-strength steel. Armour
Res. Foundat., Chicago, 1961). The maximum cyclic hardness of ShKh15 steel was
tested after a. electroslag smelting followed by vacuum smelting (very pure ShKh15 -

Cord 1/2

L 23446-65

ACCESSION NR: A74049945

free from nonmetallic admixtures); b. the same as (a) but less pure (ShKh15S); c. electroslag smelting only (ShKh15Sh); d. ordinary smelting in an open electric oven (ShKh15); e. double vacuum arc smelting of pure steel (ShKh15Ch); and f. the same as (e) with an ordinary smelt (ShKh15D). The optimum hardening temperature for the ShKh15S and ShKh15D steel was 850C while all the other steels showed maximum cyclic hardness after hardening at 840C (all samples were annealed at 150C during a 2-hour period). The cyclic hardness of the air-hardened ShKh15 steel from different types of smelts depended on the presence of nonmetallic admixtures as well as on its density. An increase in purity and in density led to a 25-30% increase in fatigue strength. "The degree of contamination of the steel with non-metallic impurities was evaluated by Engineer N.I. Zakhodskaya; Engineer B.F. Ryabov took part in developing and setting up the system of automatic furnace temperature control." Orig. art. has: 3 figures and 5 tables.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: MM

NO REF SOV: 020

OTHER: 004

Cord 2/2

L 23067-65 EWT(m)/FWP(w)/EWA(d)/T/FWP(t)/FWP(b) MJW/JD/WB

ACCESSION NR: AT4049948

S/2723/64/000/003/0130/0134

AUTHOR: Kuslitskiy, A.B.; Babey, Yu. I.; Serebriyskiy, E.I.; Mizetskiy, V.L.; Borisov, A. Ya.

TITLE: Corrosion resistance and fatigue strength of annealed ShKh15 steel from electroslog and vacuum smelts

SOURCE: AN UkrSSR. Fiziko-mekhanicheskiy institut. Vliyaniye rabochikh sred na svoystva materialov, no. 3, 1964, 130-134

TOPIC TAGS: steel corrosion, steel fatigue strength, steel annealing, saline corrosion, electroslog melting, vacuum melting, steel impurity/steel ShKh15

ABSTRACT: While the physical and mechanical properties of annealed ShKh15 steel are known to a considerable extent, the resistance to fatigue had not yet been sufficiently investigated. Since the work described earlier by the same authors (AN UkrSSR. Fiziko-mekhanicheskiy institut. Vliyaniye rabochikh sred na svoystva materialov, No. 3, 1964, 107-118) indicated that the differences in smelting technology result in variations in the admixture content of the samples, they now investigated the effects of these nonmetallic admixtures on the static hardness characteristics, fatigue strength, and corrosion resistance of various annealed steels. The results show that: 1. ShKh15 steels from

Card 1/3

L 23067-65

ACCESSION NR: AT4049948

ordinary, electroslag and vacuum smelts in the annealed state have approximately equal static hardness and fatigue strength in air; 2. in a corrosive medium, double vacuum-smelted steel and pure samples from single electroslag smelts with a subsequent vacuum smelting show the best fatigue properties (see Fig. 1 of the Enclosure). Orig. art. has; 2 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 01

SUB CODE: MM

NO REF SOV: 007

OTHER: 000

Card 2/3

L 23067-65

ACCESSION NR: AT4049948

ENCLOSURE: 01

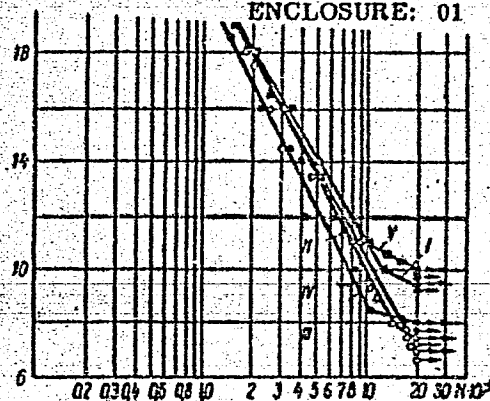
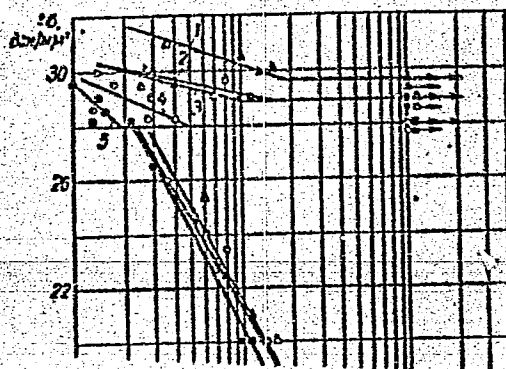


Fig. 1. Fatigue curves of annealed ShKh15 steel of various types, tested in air (Arabic numerals) and in 3% aqueous saline (Roman numerals): 1, I - ShKh15 steel prepared by a single electroslag smelting followed by a single vacuum smelting and containing less non-metallic impurities than in 2/II; 2, II - ShKh15S steel, prepared as in 1, I but containing more non-metallic impurities; 3, III - ShKh15Sh steel prepared by a single electroslag smelting; 4, IV - ShKh15 steel prepared in the usual way; 5, V - ShKh15Ch steel, prepared by double vacuum melting from an especially pure furnace charge.

Card 3/3

BORISOV, G.K.; VLASOV, S.M.

Determination of the constants of monosilane thermal diffusion by the column method. Trudy po khim.i khim.tekh. no.1:3-7 '63.

(MIRA 17:12)

L 21923-66 EWA(h)/EWT(m)/T/EWA(d)/EWP(w)/EWP(t) IJP(c) (1)

ACC NR: AF6014622 SOURCE CODE: UR/0133/65/000/002/0151/0153

AUTHOR: Kuslitskiy, A. B.; Babey, Yu. I.; Karpenko, G. V.; Serebriyskiy, E. I.;
Mizetskiy, V. L.; Borisov, A. Ya. 53

ORG: none 50

TITLE: Influence of nonmetallic inclusions and metal density on the fatigue strength
of electroslag and vacuum remelted ShKh15 steel 16

SOURCE: Stal, no. 2, 1965, 151-153

TOPIC TAGS: nonmetallic inclusion, bearing steel, steel, electroslag melting,
vacuum melting, density, steel microstructure, fatigue strength, annealing/ShKh15
bearing steel

ABSTRACT: Very strict requirements have been set forth as to the purity of ShKh15
ballbearing steel for manufacturing precision instrument bearings. These requirements
can only be satisfied by special technology, e. g., by means of vacuum-arc and
electroslag remelting (VAR and ESR). The degree of purity as to nonmetallic inclusions
is not the same for different methods of remelting. The metal also differs in density.
The authors of this paper investigated the relationship of both nonmetallic inclusions
and density to fatigue strength of ShKh15 steel which was processed by six different
methods: I and II-ESR+VAR (steel ShKh15P and ShKh15S); III-ESR (steel ShKh15Sh);
IV--conventional melting in an open arc furnace (ShKh15); V--double VAR of a steel
smelted from pure charge materials; and VI--double VAR of ordinary billets. As to

Cord 1/2 UDC: 669.15

L 21923-66

ACC NR: AP6014622

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chemical composition, the steel of all the melting methods conformed to GOST 801-60. Nonmetallic inclusions content was measured according to the scale of ChMTU 236-60. Density was measured by hydrostatic weighing of 20 samples from each of three melts (after quenching and low tempering). The samples were fatigue tested by the rotating-beam method using an NU machine at 50 cps. Samples for fatigue testing were turned from 18-20 mm annealed rods which were then heated to 840-850 C, oil quenched, and tempered at 150°C for 2 hours. The method used for evaluating contamination of the steels did not make it possible to establish a definite relationship between the content of individual forms of nonmetallic inclusions melted by the different methods and their fatigue limit, but, in general, the fatigue strength was lower for those steels which had a higher inclusion content. Of all the methods used it was found that electroslog remelting yields a denser microstructure and, consequently, a higher fatigue strength. Therefore, density of ballbearing steel should be considered as one of the most important factors of its quality and be rigidly controlled in the production of highly reliable bearings. Orig. art. has: 3 figures and 1 table. [JPRS]

SUB CODE: 11, 13, 20 / SUBM DATE: none / ORIG REF: 010 / OTH REF: 006

Card 2/2 ast

BORISOV, A. YE.

"On Organometallic Compounds of Mercury , Part 28. More Data on Addition Products of Metal Halides to Unsaturated Compounds," Iz. Ak. Nauk, SSSR, Otdel. Khim. Nauk. No. 2, 1945. Institute of Organic Chemistry, Academy of Sciences of the USSR, -1945-.

[illegible]

[illegible]

1ST AND 2ND DDP(ES)																		PROCESSING AND PROPERTIES INDEX																		3RD AND 4TH CDDERS																	
MATERIALS NOTES CROSS REFERENCE																		<p style="text-align: right;">16</p> <p><i>Organometallic compounds of mercury.</i> XXXII. (I). The preservation of the geometrical configuration of the chlorovinyl group in double decomposition reactions. A. N. Nesmeyanov, A. E. Borisyuk, and A. N. Gus'kova. (Inst. Org. Chem., Akad. Sci. U.S.S.R.), Bull. acad. sci. U.S.S.R. Class. chem. 1948, 288-40 (in English); <i>J. Amer. Chem. Soc.</i> 70, 3480-1. <i>cis</i>-(ClCH=CH)₂Sb (I) 646; <i>Sn</i> (II), m.p. 123° (decomp.). <i>trans</i>-ClCH=CH-Sb (II), m.p. 123° (decomp.). Similarly, <i>cis</i>-(ClCH=CH)₂Sb (III) and HgCl in abs. EtOH give 90% <i>cis</i>-(<i>trans</i>-chlorovinyl)mercuric chloride (IV), m. 78.5-9°. In neither reaction is the ether linkage formed, but when a mixt. of I and III reacts with HgCl₂, a mixt. of II and IV results. When IV is treated with NH₃ in dry CCl₄ it gives 70.9% <i>cis</i>-bis(<i>trans</i>-chlorovinyl)mercury (V), which does not solidify on solid CO₂, d₄²⁰ 2.8000, n_D²⁰ 1.5308, M_R found 40.02, calcd. 45.52 (surface tension) 45.52 ergs/cm.², parachor calcd. 200.3, found 200.0. When V is heated at 100-5° or treated with KCN, Na₂CO₃, KI, or PbO, it decomps. to HgCl₂ and C₂H₄. It is thus a quasicomplex compd. V and HgBr₂ in dry Et₂O give 90% IV. Similarly, V and HgBr₂ give 97.6% <i>cis</i>-(<i>trans</i>-chlorovinyl)mercuric bromide, m. 101-2° (decomp.). Cl and <i>trans</i>-(ClCH=CH)₂Hg in CCl₄ give II. V and Cl form IV. Cl reacts with I at 120-30° to give <i>trans</i>-ClCH=CHCl. In all these reactions the stereochem. configuration of the chlorovinyl group remains unchanged as it is transferred from atom to atom. H. M. Leicester</p>																		<p style="text-align: center;">METALLURGICAL LITERATURE CLASSIFICATION</p> <p>FROM SYNDICATE</p> <p>SELECTED</p>																	
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Organomercury compounds. XXXIII. Synthesis of two stereoisomeric chlorides of bis(2-chlorovinyl)tin starting with stereoisomers of bis(2-chlorovinyl)mercury. A. N. Neameyanov, A. E. Borisov, and A. N. Abramova. *Izvest. Akad. Nauk S.S.S.R. Otdel. Khim. Nauk* 1946, 047-50; cf. C.A. 42, 6840g. — From 2 g. *trans*-(ClCH=CH)₂Hg in 5 ml. abs. EtOH slightly acidified by HCl and 1.2 g. dry SnCl₄ in 5 ml. abs. EtOH, heated 10 min. at 45-50°, then let stand 1 hr., was isolated 97% Hg, while evapn. of the soln. and addn. of petr. ether gave 58% of a solid isomer of (ClCH=CH)₂SnCl₄, m. 77.5-8.5° (from petr. ether), which loses 100% C₂H₄ with 15% KOH, while HgCl₂ in EtOH gives the solid *trans*-(ClCH=CH)₂SnCl₄, decomp. 123°. Similar reaction of 100% Hg and the *cis-cis* isomer after 7 hrs. at 65-70° gave 100% Hg and the *cis-cis* isomer of (ClCH=CH)₂SnCl₄, b. 100-2°, n_D²⁰ 1.5675, d₄²⁰ 1.7494, which loses C₂H₄ only with 50% KOH, while heating 2 hrs. in alc. with HgCl₂ gave 84% *cis-cis*-(ClCH=CH)₂SnCl₄, m. 77-8° (from petr. ether). G. M. K.

USSR/Chemistry - Mercury
Chemistry - Isomers

May/Jun 1947

"Organometallic Compounds of Mercury: XXXVI, The Rearrangement of Stereoisomeric Organometallic Compounds of the Ethylene Series by Illumination with Ultraviolet Rays," A. N. Nesmeyanov, A. E. Borissov, A. N. Abramova, 4 pp

"Izv Ak Nauk Otd Khim Nauk" No 3

Rearrangement of mercury di(trans-beta-chlorovinyl) to liquid mercury di(cis-beta-chlorovinyl) by illumination with quartz mercury lamp ultraviolet rays.

PA 15T22

CA

Organomercury compounds. XXXVI. Rearrangement of stereoisomeric metal organic compounds of the ethylenic series on illumination with ultraviolet radiation. A. N. Nesmeyanov, A. F. Borisov, and A. N. Abramova. (Inst. Org. Chem. Acad. Sci. U.S.S.R., Moscow). *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1947, 289-93 (in Russian); cf. *C.A.* 42, 4148i. — Fused *trans-trans*-(CHCl:CH)₂Hg (I), m. 71°, exposed 17 hrs. to a quartz Hg-vapor lamp at a distance of 2-3 cm., gave 45% liquid *cis-cis*-(CHCl:CH)₂Hg (II), b. 52.5-3° under 1.3×10^{-3} mm. Hg, d_4^{20} 2.7929, n_D^{20} 1.6121, σ 47.18 dynes/cm.; these consts. are better than those previously given for a less pure product. The yield increases with the length of exposure, e.g., 10, 42, and 76 hrs., 24, 47, and 65.5%. With HgCl₂, II gave quantitatively *cis*-(CHCl:CH)₂HgCl (III), m. 78-8.5°; the same product was obtained in the reaction between HgCl₂ and II exposed 12 hrs. to ultraviolet light; the total absence of *trans*-(CHCl:CH)₂HgCl (IV), m. 121°, indicates that the photochem. rearrangement of I gives no *cis-trans* isomer. The photochem. rearrangement of I into II is not reversible. While IV in the fused state is unaffected by ultraviolet light, in C₆H₆ (4 g. in 25 ml.) 50 hrs. exposure at a distance of 2-3 cm. gave 23.7% III; in abs. alc. and in PhMe, the yields are lower (10 and 8%, resp.). N. Thon

chem 9

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CA

Conservation of the stereochemical configuration in reactions of electrophilic and radical substitution at an olefinic carbon atom. A. N. Nesmeyanov and A. E. Borisov. *Doklady Akad. Nauk S.S.S.R.* 60, 67-72 (1948).—Proofs are submitted demonstrating that, in reactions involving exchange of the $\text{ClCH}:\text{CH}$ group, and, by extension, in electrophilic substitutions at an allylic C atom, the initial configuration, *cis* or *trans*, is preserved. Thus, 2 *trans*- $\text{ClCH}:\text{CHHgCl}$ (m. 124°) + $\text{NH}_3 \rightarrow \text{NH}_2\text{HgCl} + \text{NH}_4\text{Cl} + \text{trans-trans-(ClCH}:\text{CH)}_2\text{Hg}$ (m. 70°). Irradiation of the latter with a Hg lamp converts it into the liquid *cis,cis* compd., reacting according to *cis,cis*-($\text{ClCH}:\text{CH)}_2\text{Hg} + \text{HgCl}_2 \rightarrow 2$ *cis-cis*-($\text{ClCH}:\text{CH)}_2\text{HgCl}$. The configurations of the *trans*- and *cis*-($\text{ClCH}:\text{CH)}_2\text{HgCl}$ are confirmed by the dipole moments, 1.64 and 2.70 debye, resp., and the m.p.s., 124° and 70°, resp. The configurations of the two ($\text{ClCH}:\text{CH)}_2\text{Hg}$ are definitely established by the products of the reaction $(\text{ClCH}:\text{CH)}_2\text{Hg} + \text{Cl}_2 \rightarrow \text{ClCH}:\text{CHHgCl} + \text{ClCH}:\text{CHCl}$; in this reaction, the *cis* compd. gives, quantitatively, the *cis* product, and the *trans* compd. gives a pure *trans* product without a trace of the *cis* isomer, the presence of which would have been readily detected by its soly. in petr. ether. Similar preservation of the original *cis* or *trans* configuration was further ascertained in other electrophilic substitution reactions, $(\text{ClCH}:\text{CH)}_2\text{Hg} + \text{Ph(OAc)}_3 \rightarrow (\text{ClCH}:\text{CH})\text{Ph(OAc)}_2 + \text{ClHg(OAc)}_2$; $(\text{ClCH}:\text{CH)}_2\text{Sb} + 3\text{HgCl}_2 \rightarrow 3(\text{ClCH}:\text{CH-HgCl}) + \text{SbCl}_3$; $(\text{ClCH}:\text{CH)}_2\text{SnCl}_2 + 2\text{HgCl}_2 \rightarrow 2(\text{ClCH}:\text{CH-HgCl}) + \text{SnCl}_4$. The same applies to the following reactions, in which the $\text{ClCH}:\text{CH}$ group participates not as a π -system.

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with a pair of electrons (as in the foregoing reactions) but with one odd electron, and which, consequently, are of the radical substitution type: $(\text{ClCH}:\text{CH)}_2\text{Hg} + \text{SnCl}_4 \rightarrow (\text{ClCH}:\text{CH})\text{SnCl}_3 + \text{Hg}$; $(\text{ClCH}:\text{CH})\text{PhCl}_2 + \text{SnCl}_4 \rightarrow (\text{ClCH}:\text{CH})\text{SnCl}_3 + \text{PhCl}$; $(\text{ClCH}:\text{CH})\text{PhCl}_2 + \text{Hg} \rightarrow \text{ClCH}:\text{CHHgCl} + \text{Ph}$; $(\text{ClCH}:\text{CH})\text{PhCl}_2 + \text{Hg} \rightarrow (\text{ClCH}:\text{CH})\text{SnCl}_3 + \text{TiCl}_4$; $(\text{ClCH}:\text{CH})\text{TiCl}_4 + \text{Hg} \rightarrow \text{ClCH}:\text{CHHgCl} + \text{Ti}$. N. Thon

RECEIVED

Borisov, A. E.

Nesmeyanov, A. N., Batuyev, M. I. and Borisov, A. E.
Izvest. Akad. Nauk SSSR, Otdel, Khim. Nauk 1949, 567-9

CA: 44-2374/b

Raman spectra of chlorovinyl derivatives of mercury and antimony.

RECEIVED

CM

Synthesis of stereoisomeric organotin compounds with ethylenic structure from organomercury *cis-trans* isomers and their rearrangement in ultraviolet light. A. N. Nesmeyanov, A. E. Huzarsky, and A. N. Abramova (Inst. Org. Chem., Moscow). *Dokl. Akad. Nauk S.S.S.R.*, 1949, 200, 1. Heating 10 g. *trans*- $\text{CICH}_2\text{CH=CHHgCl}$ and 25 g. Sn-Sn (15% Na) in 30 ml. $\text{CICH}_2\text{CH=CH}_2$ at 45-8° 3 hrs. in a H atm. gave 40% *trans*-($\text{CICH}_2\text{CH=CH}$)- SnCl_2 , m. 120-1° (from petr. ether). Similarly the *cis*-Hg deriv. gave 58% of the *cis* isomer, b. 119.5°, n_D^{20} 1.5821, d_4^{20} 1.8058. Heating the *trans*-isomer with HgCl_2

in EtOH yields C_2H_4 and 77% *trans*- $\text{CICH}_2\text{CH=CHHgCl}$, similarly, the *cis*-isomer yields the *cis*-Hg deriv. Irradiation of the molten *trans*-Sn deriv. with ultraviolet light 25 hrs. gave 40% *cis*-isomer. Heating 15 g. *trans*- $\text{CICH}_2\text{CH=CHHgCl}$ with 2.5 g. pulverized Sn in EtOH slightly acidified with HCl to 50° 1.5 hrs. gave 90% Hg and 20% *trans*-($\text{CICH}_2\text{CH=CH}$)- SnCl_2 , m. 120-1°, and 1.3% $\text{CICH}_2\text{CH=CHSnCl}_2$, b. 61-5°, n_D^{20} 1.5602, d_4^{20} 2.0362. Similarly *cis*- R_2Hg (R is $\text{CICH}_2\text{CH=CH}$) gave 78% Hg, and an incompletely sepl. mixt. of *cis*- R_2SnCl_2 and R_2SnCl_2 , b. 55-7°, n_D^{20} 1.5714, and b. 87-90°, n_D^{20} 1.5826, resp. *trans*- R_2SnCl_2 , m. 76-8°, and the R_2SnCl_2 deriv. were obtained in 2-30% yields, along with the R_2SnCl_2 from R_2Hg and Sn and were isolated by fractional crystn. Addn. of pyridine to *trans*- R_2SnCl_2 in EtOH gave a complex, $(\text{CICH}_2\text{CH=CH})_2\text{SnCl}_2 \cdot 2\text{C}_5\text{H}_5\text{N}$, very difficultly sol. in org. solvents. G. M. Kozlovskiy

Inst. Org. Chem., AS, USSR, -1948-1

Transformation of *trans*-2-chlorovinyl metallorganic compounds of mercury and tin into the *cis*-isomers under the influence of peroxides. A. N. Nesmeyanov, A. F. Borisov, and V. D. Vil'chevskaya (Inst. Org. Chem., Moscow). *Izvest. Akad. Nauk S.S.S.R., Khim. Nauk* 1949, 578-81. Heating *trans*- $\text{ClCH}=\text{CHHgCl}$ for 2-24 hrs. to 80-100° in xylene, MePh , dioxane, or CCl_4 with traces of Ac_2O , Bz_2O_2 , or Na_2O_2 converts the Hg de-*trans* into the *cis*-isomer in 22-100% yields. Hydroquinone stops the isomerization. A similar reaction of *trans*- $\text{ClCH}=\text{CH}_2\text{SnCl}_2$ in xylene with Bz_2O_2 30 hrs. at 85-100° gave 80% of the *cis*-isomer. Probably the reaction proceeds by a chain mechanism. G. M. K.

Inst. Org. Chem., AS, USSR, 1-1949 -/

cis-Bis(2-chlorovinyl)thallium chloride. A. N. Nesmeyanov, A. B. Abusov, and R. I. Shepeleva (Inst. Org. Chem., Moscow). *Izvest. Akad. Nauk. S.S.S.R., Otdel Khim. Nauk* 1949, 582 0. $-TiCl_3$ (2.13 g.) and *cis*-(Cl-CH:CH) $_2$ Hg (4.45 g.) in 10 ml. Et_2O gave on standing 10 hrs. 22.1%, *cis*-(ClCH:CH) $_2$ HgCl, m. 145.0° (from Et_2O). This (0.1 g.) and 0.3 g. $SnCl_4$ in abs. $EtOH$ after standing 4 hrs. gave 48.6% $-TiCl_3$ and 38% *cis*-(ClCH:CH) $_2$ $SnCl_4$ b. 100.3°, n_D^{20} 1.5940. Shaking 0.1 g. *cis*- R_2TiCl with 0.4 g. Hg in $MeOH$ 90 hrs. gave 100% $-TiCl_3$ and 0.99 g. *cis*-(ClCH:CH) $_2$ Hg. Similarly, $-TiCl_3$ and a *cis*-*trans* isomer mixt. of R_2Hg in Et_2O gave 40% *trans*-(ClCH:CH) $_2$ HgCl, m. 106.7° (from dil. $EtOH$), and 13% *cis*-isomer which seps. more slowly from the soln.; only *cis*- R_2HgCl was isolated from the residue. Ultraviolet irradiation of *trans*-(ClCH:CH) $_2$ Hg 35 hrs., followed by standing for 7 days gave 40% *cis*-(ClCH:CH) $_2$ HgCl, m. 77° (from ligroin); in addn. some *cis*-*trans*- R_2Hg is formed, estd. by letting the Et_2O soln. of the mixt. stand with $-TiCl_3$ 15 min. and weighing the *trans*- R_2TiCl formed; the yields of the *cis*-*trans*-Hg deriv. range from 0 to 24.9%.

G. M. Kosolapoff

"Spectra of Combination Light Scattering of Chlorovinyl Derivatives of Mercury and Antimony"
Iz. Ak. Nauk SSSR, Otdel, Khim. Nauk 6, 1949. Inst. Org. Chem. Acad. Sci. -1948-.

Submitted 25 Sept. 1948

BORISOV, A. Ye.

37214. MAKAROVA, L. G. i BORISOV, A. Ye. Alyeksandr nikolayevich nesmeyanov.
[Khimik. K 50-letiyu so knya rozhdeniya / Zhurnal obshey khimii, 1949, vyp. 11,
s. 1971-77, s portr. - Bibliogr: [Spisok pechatnykh rabot A. N. Nesmeyanova /,
s. 1976-77.

SO: Letopis' Zhurnal'nykh Statey, Vol. 7, 1949.

CA

Aleksandr Nikolaevich Nemmyanov. L. G. Makarova
and A. E. Bogdanov. Zhur. Obshchei Khim. (J. Gen.
Chem.) 19, 1971-7(1949).—Review of scientific work,
with bibliography and portrait, on 50th birthday.
G. M. Komolapoff

CA
Alexander Nikolayevich Neemejanov on his 50th birth
day. L. G. Makarova and A. R. Borjov. *J. Gen
Chem. U.S.S.R.* 19, No. 11, 2443 (1971) (Engl. trans-
lation).—See *C.A.* 44, 28075. R. J. C.

NESMEYANOV, A. N., BATYEV, M. I.,
BORISOV, A. YE.

Raman Effect

Raman spectrum of chlorovinyl derivatives of mercury and antimony, Uch. zap. Mosk. un.,
No. 132, 1950.

Monthly List of Russian Accessions Library of Congress October 1952 Unclassified.

Thallium Compounds

Di-cis-b-chlorovinylthallium chloride. Uch. zap. Mosk. un. No. 132 1950

Monthly List of Russian Accessions. Library of Congress. October 1952. UNCLASSIFIED.

NESMEYANOV, A. N.: BORISOV, A. YE.:
ABRAMOVA, A. N.

Organometallic Compounds

Synthesis of stereoisomeric organic tin compounds with ethylenic structure from organomercury cis-trans isomers and their rearrangement in ultraviolet light, Uch. Zap. Mosk. un., No. 132, 1950.

Monthly List of Russian Accessions. Library of Congress. October 1952. Unclassified.

NESMEYANOV, A. N.; BORISOV, A. YE.
VIL'CHEVSKAYA, V.D.

Organometallic Compounds

Transformation of trans-B-chlorovinyl organometallic compounds of mercury and tin into their cis-isomers under the action of peroxides, Uch. zap. Mosk. un., No. 132, 1950.

Monthly List of Russian Accessions. Library of Congress. October 1952. UNCLASSIFIED

USSR/Chemistry - Organic Boron
Compounds

Jul/Aug 51

192T20
"Synthesis of Organic Boron Compounds of the Ethylene Series and Investigation of Their Properties," A. Ye. Borisov, Inst of Org Chem, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 4,
pp 402-408

Prepd dichloro-trans- β -chlorovinylboron and di-trans- β -chlorovinylboron chloride by exchange decomposition of trans- β -chlorovinyl Hg and Sb compds with

192T20

USSR/Chemistry - Organic Boron
Compounds (Contd)

Jul/Aug 51

BCl₃ in cold in dry kerosene or benzene. Verified constitutions by reactions with HgCl₂, TiCl₃. Org B compds can be prepd by action of org Sb compds on BCl₃ in dry inert solvent. Prepd 4 new β -chlorovinyl B compds. Found that latter compds completely eliminate C₂H₂ under action of alkali, as do quasi-complex Sb, Sn, Hg, Tl compds.

192T20

BORISOV, A. Ye

BORISOV, A. Ye.

USSR/Chemistry - Organic Mercury Com-
pounds Sep/Oct 51

"Interaction of Halogen Derivatives of Methane With Organic Mercury Compounds in the Presence of Peroxides," A. Ye. Borisov, Inst of Org Chem, Acad Sci USSR

"Is Ak Nauk SSSR, Otdel Khim Nauk" No 5, pp 524-529

Reaction of trans- ClCH=CHHgCl and trans-trans- $(\text{ClCH=CH})_2\text{Hg}$ in presence of benzoyl or acetyl peroxides with CCl_4 yielded ClCH=CH-CCl_3 and HgCl_2 with CBr_4 ClCH=CH-CBr_3 . Reaction of Ph_2Hg with CCl_4 in presence of small amounts of acetyl peroxide yielded BaCl_2 .

19516

USSR/Chemistry - Organic Mercury Com-
pounds (Contd) Sep/Oct 51

PhHgCl , and $\text{CCl}_3\text{-CCl}_3$. Difference in reaction products showed that β -chlorovinyl Hg derivs and Ph_2Hg react differently with CCl_4 . Noted that reaction of Ph_2Hg with CCl_4 when initiated by ultraviolet light instead of peroxides yielded no BaCl_2 .

19516

DDKISOV, 17-12.

Chem Ab. V48
1-25-54

Organic Chemistry

~~V. cis-2-Chlorovinylmercuric chloride. A. N. Nesmeyanov
and A. R. Borisov. Akad. Nauk S.S.S.R., Inst. Org.
Khim., Sintezy Org. Soedinenii, Sbornik 2, 146-7(1952);
cf. C.A. 44, 3881c.—Heating with stirring 8 hrs. at 90-5°
a mixt. of 10 g. trans-CHCl:CHHgCl, 25 ml. dry xylene and
0.2 g. Bz₂O₂, filtration while hot, and cooling the filtrate
gave 85-95% cis analog, m. 78-9° (some 1.5-2 g. being re-
covered from the original filtrate by addn. of petr. ether or
distn. of some xylene).~~

G. M. Kosolapoff

MF
7-28-54

BORISOV, A. Ye.

BORISOV, A. Ye. -- "Investigations in the Field of Geometric Isomerism of Organoelemental Compounds." Sub 6 Apr 52, Inst of Organic Chemistry, Acad Sci USSR. (Dissertation for the Degree of Doctorate in Chemical Sciences).

SO: Vechernaya Moskva January-December 1952

BORISOV, A.E.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Organic Chemistry

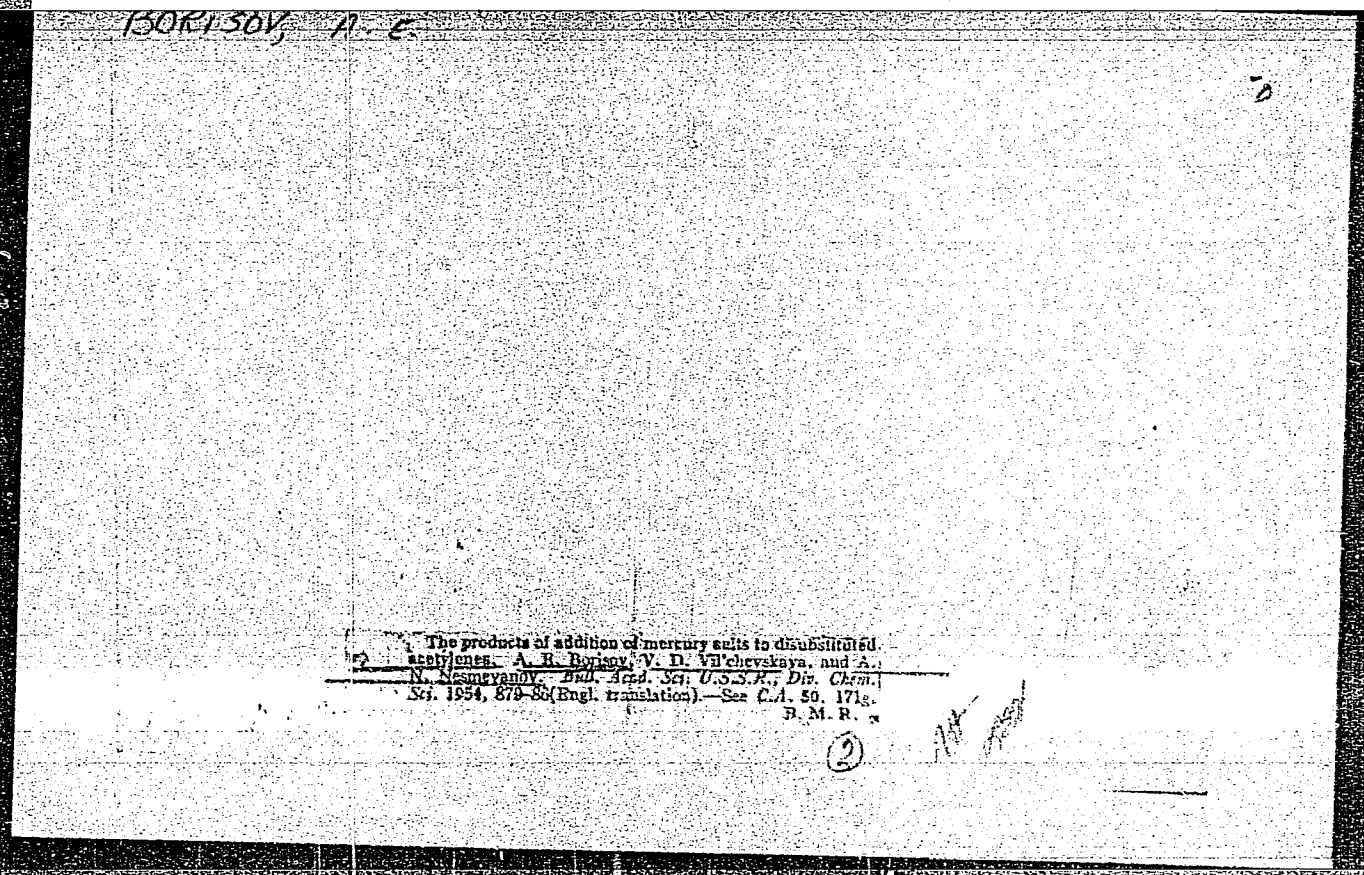
5
Addition of salts of mercury to disubstituted acetylenes.
A. E. Borisov, V. D. Vashurkova, and A. N. Nesmeranov. *Doklady Akad. Nauk S.S.S.R.* 90, 383-5 (1953).— $\text{MeC}\equiv\text{CMe}$ with $\text{Hg}(\text{OAc})_2$ in glacial AcOH yields 3 isomeric products, isolated as chlorides by addn. of KCl and sepd. by crystn. from C_6H_6 -ligroline: α , m. 140° ; β , m. $95-6^\circ$; and γ , m. 130° . Heated with 15% HCl all yield EtMeCO , showing the location of AcO group on the 2nd C atom. Ozonization of the α - and β -forms gave the same product (AcOH), while the γ -isomer gave lactic acid and HCO_2H , indicating that the α - and β -forms are *cis-trans* isomers of $\text{MeC}(\text{HgCl})\text{CMeOAc}$, while the γ -isomer is $\text{MeCH}(\text{HgCl})\text{C}(\text{CH}_3)\text{OAc}$. Under the above conditions $\text{ClH}:\text{C}\equiv\text{CHMe}$ yields only insol. poly-Hg derivs., and only in MeOH soln. does it yield $\text{C}_6\text{H}_5(\text{OMe})\text{HgCl}$, m. 124° . Heating the α -isomer 2 hrs. at 56° yields the β -isomer, while further heating 2 hrs. at 70° gave the γ -isomer if the isomerization was run with the original HgOAc deriv., since the HgCl derivs. do not isomerize on heating, ultraviolet irradiation, or in the presence of org. peroxides. It is believed that the β -isomer, because of its lower m.p., is the *cis* form. All 3 forms are readily symmetrized in C_6H_6 by dry NH_3 , yielding, resp.: $[\text{MeC}(\text{OAc})\text{CMe}]_2\text{Hg}$, m. $101-2^\circ$, $[\text{MeC}(\text{OAc})\text{CMe}]_2\text{Hg}$, m. $113-14^\circ$, and $[\text{CH}_3\text{C}(\text{OAc})\text{CHMe}]_2\text{Hg}$, m. 130° ; these with HgCl_2 in a reverse reaction yield the RHgCl derivs., which are identical with the initially used substances. $(\text{PhC})_2$ with $\text{Hg}(\text{OAc})_2$ in AcOH yields only 1 product, isolated, as above, as $\text{PhC}(\text{HgCl})\text{CPh}(\text{OAc})$, sol. in org. solvents, m. 138° . NH_3 symmetrizes it to R_2Hg , m. $170-1^\circ$, which with HgCl_2 regenerates the original substance. Ozonolysis yields BzOH and AcOH . Treatment with HCl yields PhCH_2Bz . Irradiation of the RHgCl with ultraviolet light 48 hrs. gave an isomer, m. $255-7^\circ$.
C. M. Kosolapoff.

BORISOV, A. E.
USSR/Chemistry - Organic chemistry
Card 1/2 **Pub.** 40 - 7/27
Authors : Nesmeyanov, A. N.; Borisov, A. E.; and Vol'kenau, N. A.
Title : Synthesis of stereoisomeric mercuriorganic compounds from lithium-organic compounds
Periodical : Izv. AN SSSR. Otd. khim. nauk 6, 992-1001, Nov-Dec 1954
Abstract : The synthesis of stereoisomeric alpha-mercuribistilbenes through the reaction of geometric isomers of alpha-lithiumstilbene with HgCl_2 is described. The disymmetrization reaction of stereoisomeric alpha-chloro-mercuristilbenes.
Institution : Acad. of Sc., USSR, The N. D. Zelinskiy Institute of Organic Chemistry
Submitted : February 13, 1954

Periodical : Izv. AN SSSR. Otd. khim. nauk 6, 992-1001, Nov-Dec 1954

Card 2/2 Pub. 40 - 7/27

Abstract : The symmetrization reaction of stereoisomeric alpha-chloromercuristilbenes which produces the basic alpha-mercuribistilbenes was investigated. The conditions favorable for the isomerization of cis-alpha-lithiumstilbene and cis-alpha-mercuribistilbene into homologous trans-isomers are discussed. Twenty-two references: 8 USSR, 8 USA, 1 French and 5 German (1895-1952). Tables; graph.



Borisov, A.E.

USSR Chemistry - Analytical chemistry

Card 1/1

Pub. 40 - 9/27

Authors : Borisov, A. E.; Vil'chevskaya, V. D.; and Nesmeyanov, A. N.

Title : The study of products obtained by the addition of mercury salts to disubstituted acetylenes

Periodical : Izv. AN SSSR, Otd. khim. nauk 6, 1008-1018, Nov-Dec 1954

Abstract : The chemical and physical properties of mercury-salt disubstituted-acetylene addition products were determined through the study of the infrared absorption spectrum. The geometrical configurations of the products were determined by the method of even and uneven cycles. The new reaction leading to direct synthesis of thallium-organic compounds from symmetrical mercuri-organic compounds and thallium trichloride is described. Five USSR references (1948-1953). Graphs

Institution : Acad. of Sc., USSR, The N. D. Zelinskiy Institute of Organic Chemistry

Submitted : February 13, 1954

BORISOV, A. E.

USSR/Chemistry

Card 1/1

Authors : Nesmeyanov, A. N. Academician, Borisov, A. E., and Novikova, N. V.

Title : Isopropenyl mercury and thallium compounds and investigation of their chemical properties

Periodical : Dokl. AN SSSR, 96, Ed. 2., 289 - 292, May 1954

Abstract : Isopropenyl mercury and thallium compounds were derived from the reaction of mercury salts with isopropenyllithium which in turn was obtained from the reaction of metallic lithium and isopropenyl bromide in a dry ester medium. The isopropenyllithium in ester reacts with mercuric bromide forming isopropenyl mercury bromide with yield of 65%. Recrystallized from acetone it continuously melted at 167°. Isopropenyllithium in an ester solution reacts easily with thallium trichloride forming diisopropenyl thallium. Four references; 3 USSR since 1895.

Institution : Academy of Sciences USSR, Institute of Elementary-Organic Compounds

Submitted : March 13, 1954

Exchange Reactions of Stereoisomeric Mercury Derivatives of Sulbene

Iz. Ak Nauk SSSR. Otdel. Khim
Nauk, No 2, 1956, pp 157

Translation 564938C

Borison, A.E.

Chem

✓ Exchange reactions of stereoisomeric mercury derivatives of stilbene. A. N. Nesmeyanov, A. E. Borison, and N. A. Vol'kenau (Inst. Leningrad, Comp. Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Otd. Khim. Nauk* 1956, 162-71; *Bull. Acad. Sci. U.S.S.R. Div. Chem. Sci.* 1956, 157-64 (Engl. translation); cf. *C.A.* 49, 68923. — *trans*-(PhCH: CPh)₂Hg (I), and TiCl₄ in dioxane in 1 hr. at 70-80° gave 97% TiCl and 91% *trans*-PhCH: CPhHgCl (II), m. 140-1°, as well as 87% *trans*-α-chlorostilbene, m. 52-3.5°. *cis*-I similarly gave 98% TiCl and 91% *cis*-PhCH: CPhHgCl, m. 130-1°. The same reactions in Et₂O are very slow and incomplete. Refluxing *trans*-PhCH: CPhHgCl with 15% Na-Sn alloy in xylene 3 hrs. gave 77% *trans*-I and a little *trans*-stilbene; in C₆H₆ the reaction requires 8 hrs. *cis*-PhCH: CPhHgCl similarly gave with Na-Sn alloy 97% *cis*-I in hot C₆H₆ in 3 hrs. I with SnCl₄ in sealed tube at 100° or 180° gave Hg, stilbene, II, and unreacted I; the reactions were run in EtOH, EtOH-HCl, Me₂CO, and dioxane. In EtOH II and SnCl₄ gave a good yield of I, while in EtOH-HCl or Me₂CO, stilbene was the main product. *cis*-I with SnCl₄ gave a high yield of Hg, some stilbene, PhCH: CPhSnCl₃ (if run in Me₂CO), some PhCH: CPhSnO₂H (after hydrolysis), and some (PhCH: CPh)₂SnO (in reaction run in Me₂CO). PhCH: CPhSnCl₃, m. 108-10°; PhCH: CPhSnO₂H, m. 157-60°; (PhCH: CPh)₂SnO, does not m. 300°. The acid with SOCl₂ gave RSnCl₂, which also formed from R₂SnO and SOCl₂ (R = PhCH: CPh). PhCH: CPhSnCl₂ and HgCl₂ in EtOH gave 87% *cis*-II, m. 129-30°. RSnO₂H or RSnCl₂ with aq. alc. HgO (prepd. *in situ* from HgCl₂ and NaOH) gave 89-87% *cis*-I. I and HgBr₂ in hot EtOH gave 98% PhCH: CPhHgBr (III), m. 157-8°; *cis*-I

1/2

NEUMANN, A. - PARIS, A.
 similarly gave a 99% yield of isomeric $PhCH:CHPhBr$
 (IV), m. 118-19°. The former isomer with aq. Me_2CO
 KI soln. gave 99% I, while the latter isomer gave 53% *cis*-I.
cis-II and alc. Na_2SnO_3 gave 95% *cis*-I, while IV gave 94%
cis-I; II and its Br analog gave *trans*-I. Symmetrization
 with NH_3 in $CHCl_3$ soln. gave a similar result. Dioxane-
 Br_2 complex with *trans* and *cis* isomers of $RHgCl$, $RHgBr$,
cis-I, $RSnCl_3$, $RSnO_2H$, or R_2SnO gave the corresponding
 RBr. I gave some RBr, as well as some III. Bromination
 of I in C_6H_6 gave 91% *trans*-RBr and 88% Hg. G. M. K.

DM²
 [Signature]

BORISOV, A. E.

Stereochemistry of electrophilic substitution at the olefinic carbon

A. E. Borisy (Acad Sci USSR) — Exchange of letters of 1957. — Exchange of letters of 1957.

ROCH₂CH₂Me (C. and C. 48, 4434), and the configuration of the racemates was assigned. Apart from ROCH₂CH₂CH₂Me, the only other optically active ROCH₂CH₂CH₂CH₂Me compounds, and both of which are optically active, are the configuration of ROCH₂CH₂CH₂CH₂Me, the configuration of which was definitely assigned. Pb. II and typical examples of ethyl compounds, produced from *trans*-I and liquid Sn and SnCl₄ chloroethyl compounds, from *cis*-I were proved to be *trans* and *cis* forms, resp., by odd- and even-no. step cyclic reactions. All the exchange reactions tabulated proceeded with strict retention of the configuration of the ROCH₂CH₂ group and it followed that electrolytic and homolytic substitutions at the olefinic C atom took place without change of configuration. This assertion had been further substantiated by more recent stereospecific transformations of *cis*- and *trans*-MeC(HgCl):C(OAc)Me (cf. B., et al., C.A. 48, 4434), by exchange reactions of monobromostilbenes (cf. N., et al., C.A. 49, 6892d), and by exchange reactions starting from *cis*- and *trans*-MeCH:CHBr. The retention of configuration in electrophilic and homolytic substitutions at the olefinic C atom is thus shown to be of an entirely general character and the findings of Braude and Cole (C.A. 46, 858b), Dreiding and Pratt (C.A. 49, 5278c), and Curtin, et al. (C.A. 46, 3521h; 50, 8400a), were explained and confirmed. C. H. Addison.

Distr: 4E4j

Va-Styryl compounds of lithium, mercury, and thallium
A. B. Andronov and N. V. Novikova (Inst. Heteroborg.
Chemical Acad. Sci. U.S.S.R., Moscow). Izv. Akad.
Nauk S.S.S.R., Otdel. Khim. Nauk 1957, 1258-60; cf.
C.A. 49, 6976c. — Li (0.78 g.) in abs. Et₂O with 10 g. Ph-
CBr:CH₂ added in 1.5 hrs. at 8-10° gave an Et₂O soln. of
PhCLi:CH₂ (I). This with HgBr₂ gave, after 1 hr. stirring
and treatment with 1% HBr, 33% PhC(HgBr):CH₂, m.
89.5-90.5° (Me₂CO), which with dry NH₃ in C₆H₆ gave in
1.5 hrs. 82% (PhC:CH₂)₂Hg, m. 88-9°; the symmetrization
is also effected by Na stannite in 84% yield. The product
with HgCl₂ in Me₂CO gave 86% PhC(HgCl):CH₂, m.
95-6°. The soln. of I above treated with TlBr₃ in Et₂O
and the mixt. decompd. with 1% HBr gave 22% (PhC-
CH₂)₂TlBr (II), m. 155-8°, also formed from TlBr₃ and
(PhC:CH₂)₂Hg in Et₂O. Similarly, TlCl₃ gave 70%
(PhC:CH₂)₂TlCl, m. 159-60°. II shaken with Hg in
Me₂CO at 40° 5 hrs. gave 66% (PhC:CH₂)₂Hg.
G. M. Kozolapoff

BORISOV, A. E.

AUTHOR: POTKOV, L. L. PA - 2503
 TITLE: Scientific Meetings and Conferences. (Nauchnye sessii konferentsii soveshchaniya, Russian)
 PERIODICAL: Vestnik Akademii Nauk SSSR, 1957, Vol 27, Nr 2, pp 102 - 106 (U.S.S.R.)
 Received: 5 / 1957 Reviewed: 6 / 1957
 ABSTRACT: From October 29th to 31st a conference was held in Kiev of the Scientific Council of the Department for Chemistry of the Academy of Science of the U.S.S.R., of the Department for Chemical and Geological Sciences of the Academy of Science of the Ukrainian SSR and the Kiev Department of the Soviet Chemical Society on problems of stereochemistry of chemical reactions.
 A.A. Nesmeyanov read a paper on his own behalf as well as on the behalf of A.E. Borisov on the stereochemistry of olefinic hydrocarbon compounds. The paper contained the results of investigations of stereometric and metalorganic compounds of the ethylene series. These investigations enabled the authors to deduce a law, according to which homolytic replacements of olefinic carbon atoms occur in such a way, that the geometrical configuration remains unchanged.
 This theorem was examined on the basis of the organic compounds of Sb, Li, Tl. On this occasion the investigation considered not only compounds originating from the active force of non-metallic halides, for example $HgCl_2SbCl_5$, but also acetous metal compounds.

Card 1/3

5(3)

SOV/62-58-12-16/22

AUTHORS:

Nesmeyanov, A. N., Borisov, A. Ye., Savel'yeva, I. S.,
Golubeva, Ye. I.

TITLE:

Vinyl Compounds of Heavy Metals (Vinil'nyye soyedineniya
tyazhelykh metallov)

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk,
1958, Nr 12, pp 1490-1491 (USSR)

ABSTRACT:

In this brief report the authors report on the synthesized organic vinyl compounds of heavy metals. By the action of vinyl magnesium bromide on mercury bromide in tetrahydrofuran the vinyl mercury bromide was obtained. The latter easily becomes symmetric by sodium stannite and forms the liquid di-vinyl mercury. By a series of exchange reactions a number of other organo-metallic vinyl compounds were obtained from di-vinyl mercury. By a double decomposition of divinyl thallium chloride as well as of divinyl thallium bromide with tin bromide and thallium halides the corresponding vinyl derivatives of these metals were obtained. There are 11 references, 8 of which are Soviet.

Card 1/2

SOV/62-58-12-16/22

Vinyl Compounds of Heavy Metals

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR
(Institute of Elementorganic Compounds, Academy of Sciences,
USSR)

SUBMITTED: May 20, 1958

Card 2/2

AUTHORS: Rastegayev, M. V., Borisov, A. Ye. SOV/32-24-7-39/65

TITLE: An Apparatus for High-Temperature Impact Bending Tests of Samples of Heat-Resistant Alloys (Prisposobleniye dlya vysokotemperaturnogo ispytaniya na udarnoye rastyazheniye obraztsov iz zharoprochnykh splavov)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 7, pp. 871 - 871 (USSR)

ABSTRACT: A device for the impact bending test machine MK 30 was worked out which makes it possible to carry out simple and reliable hot-tests of the impact bending of round samples of heat-resistant high alloys; also low temperature measurements down to -194° may be carried out. The device consists of two parts, a fixed and a movable one; in the latter the sample is mounted; it may be heated in a silite furnace KO-14 to the experimental temperature together with the sample, then it is fixed in the first part and the pendulum is lowered. The broken through sample falls into a tank with running water and is quenched in order to maintain the structural properties. The main characteristic of the device is the uniform heating

Card 1/2

SOV/32-24-7-39/65

An Apparatus for High-Temperature Impact Bending Tests of Samples of Heat-Resistant Alloys

of the sample over its whole length; the sample, heated to 1200 - 1300°, maintain its temperature (after leaving the furnace) for 5 - 6 seconds. This fact secures safe results, as the whole test process does not last longer than 3 - 4 seconds. The device described has now been in use for series tests at the mentioned institute for six years.

ASSOCIATION: Institut metallurgii Akademii nauk SSSR (Institute of Metallurgy, AS USSR)

Card 2/2

BORISOV, A. Ye.

AUTHORS: Nesmeyanov, A. N., Member, Academy of Sciences, USSR, Borisov, A. Ye., Novikova, N. V. 20-119-3-29/65

TITLE: Conservation of Propenyl Radical Configuration in Metal to Metal Transition Reactions (Sokhraneniye konfiguratsii propenil'nogo radikala v reaktsiyakh perekhoda ot metalla k metallu)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 3, pp. 504-505 (USSR)

ABSTRACT: The authors continue their papers on the stereochemistry of the atom exchange reactions (ref 1). The atoms are connected with the olefine-hydrocarbon. The authors realized several transitions of the cis- and correspondingly of the trans-propenyl-radical in starting from the stereo-isomeric-1-bromo-1-propenes (table 1). These bromides were transformed by action of lithium in ether at +5 to -7°C into corresponding stereoisomeric lithium-propenyl compounds and further into several propenyl-organometallic compounds of Hg, Sn and Tl by subsequent exchange reactions at reduced temperatures. Corresponding stereoisomers of crotonic acid were formed

Card 1/3

Conservation of Propenyl Radical Configuration in Metal to 20-119-3-29/65
Metal Transition Reactions

by CO_2 action. The configuration of the initial bromo-propene is known as well as the configuration of the crotonic- and isocrotonic acid. The configuration of the two compounds of lithium-propenyl which were formed by lithium action on an ether solution of a corresponding bromo-propene at 5 to -70°C was proved by the presence of frequencies 700 and 1623 cm^{-1} in the infrared spectrum which belong to the substances formed by cis-bromo-propene, whereas in the same spectrum of its stereoisomer frequencies 975 and 1645 cm^{-1} occur. This characterizes the first organolithium substance as cis-, the latter as a trans-isomer. The exchange reactions of these isomers of lithium-propenyl with HgBr_2 and TlBr_3 passed under conservation of their configurations, exactly like all other exchange reactions of the metals investigated by the author. This is proved by the delimitation of the transformation region of the cis-lithium-propenyl from the domain of the trans-lithium compound and by the method of even and uneven cycles (ref 1). The transitions 6,7; 7,8; 5; 7, 8, 12, 11, 5; 7, 8, 12, 11, 9, 6 and 11, 9, 10

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Conservation of Propenyl Radical Configuration in Metal
to Metal Transition Reactions

20-119-3-29/65

actually contain in the transformation series of trans-lithium-propenyl and the corresponding transformations 18, 19; 19, 20, 17; 19, 20, 24, 17; 23, 24; 23, 21, 22 - 2, 3, 5, 6 terms; they are cyclic, i.e. they return each time to the initial stereoisomer, independently of the number of terms. Therefore each probability of reactions with inversions of configuration is excluded. Thus the above material once more confirms the rule concerning the conservation of configuration in electrophil or homolytical substitutions of an olefine-hydrocarbon (ref 3) put up by the authors. The transformations 1, 13, 8, 20, 11 and 23 are here apparently homolytical, whereas the others are electrophil. There are 1 table, and 8 references, 5 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk
SSSR (Institute of Elemental-organic Compounds AS USSR)

SUBMITTED: November 20, 1957

Card 3/3

NESMEYANOV, A.N., akademik; BORISOV, A.Ye.; NOVIKOVA, N.V.

Retention of the propenyl configuration in the reactions of cis-
and trans-propenyllithium with oxo-compounds. Dokl. AN SSSR 119
no.4:712-715 Ap '58. (MIRA 11:6)
(Lithium) (Aldehydes) (Ketones)

5(3)

AUTHORS:

Nesmeyanov, A. N., Borisov, A. Ye.,
Novikova, N. V.

SOV/62-59-2-11/40

TITLE:

Exchange Reactions of the Isopropenyl Compounds of Mercury,
Thallium and Tin (Reaktsii obmena izopropenil'nykh
soyedineniy rtuti, talliya i olova)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1959, Nr 2, pp 259-262 (USSR)

ABSTRACT:

In the present paper the reactions of the double exchange of isopropenyl compounds of mercury and thallium as previously described (Ref 1) with salts of heavy metals were investigated. On fusion of diisopropenyl thallium bromide with tin bromide at 200-220° the diisopropenyl tin dibromide with a melting point of 100-101° was obtained. This readily reacts with mercury bromide and forms isopropenyl mercury bromide. This yields in alkali diisopropenyl mercury. In acetone this reaction proceeds in a more complex manner. It essentially resembles one of the variations of the interaction of symmetric organic mercury compounds with stannous salts. From the reaction products of diisopropenyl mercury with thallium tribromide at room temperature in ether the diisopropenyl

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Exchange Reactions of the Isopropenyl Compounds
of Mercury, Thallium and Tin

SOV/62-59-2-11/40

thallium bromide was obtained. This is decomposed at $190-194^{\circ}$. The interaction of diisopropenyl mercury with tin dibromide yields in various solvents isopropenyl mercury bromide, diisopropenyl tin dibromide, tetraisopropenyl tin and metallic mercury. There are 3 Soviet references.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Elemental-Organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: May 24, 1957

Card 2/2

5(3)

AUTHORS:

Nesmeyanov, A. N., Borisov, A. Ye.,
Novikova, N. V., Osipova, M. A.

SOV/62-59-2-12/40

TITLE:

Synthesis of Organo-Tin Compounds From Organomercurials and Stannous Salts in Inert Solvents (Sintez olovoorganicheskikh soyedineniy iz rtutnoorganicheskikh soyedineniy i soley dvuvalentnogo olova v inertnykh rastvoritelyakh)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 2, pp 263-266 (USSR)

ABSTRACT:

In the present paper the interaction of organomercurials with stannous salts in an inert solvent not containing any mobile hydrogen atom was investigated. It was proved that in this connection no side reaction takes place in which $(RO)_2SnX_2$ is formed such as with the application of alcohol and acetone as solvent. From the reaction of dipropenyl mercury with stannous bromide dipropenyl tin was obtained. In the case of diisopropenyl mercury, diisopropenyl tin dibromide, tetraisopropenyl tin and isopropenyl mercury bromide were precipitated. The reaction of diphenyl mercury, di-p- and di-o-toluene mercury, di- α -naphthyl mercury and

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Synthesis of Organo-Tin Compounds From Organo-
mercurials and Stannous Salts in Inert Solvents

SOV/62-59-2-12/40

diethyl mercury with stannous chloride as well as diphenyl
mercury with stannous bromide yielded normal reaction products.
There are 3 Soviet references.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR
(Institute of Elemental-Organic Compounds of the Academy of
Sciences, USSR)

SUBMITTED: May 24, 1957

Card 2/2

5(3)

SOV/62-59-4-11/42

AUTHORS:

Nesmeyanov, A. N., Borisov, A. Ye., Novikova, N. V.

TITLE:

On the Possibility of a Synthesis of Organic Tin Compounds by the Reduction of Organic Thallium Compounds With Salts of Divalent Tin (O vozmozhnosti sinteza olovoorganicheskikh soyedineniy vosstanovleniyem talliyorganicheskikh soyedineniy solyami dvouvalentnogo olova)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 4, pp 644-646 (USSR)

ABSTRACT:

In the present work the interaction of cis- and trans-di-propenylthallium bromide, diisopropenylthallium bromide, di- α -naphthylthallium bromide with tin bromide and the interaction of diphenylthallium chloride and di-p-tolylthallium chloride with tin chloride upon heating of the reaction products ground to a powder, without solvents, was investigated. The yield of reaction products was between 50% and 85%. A stereo isomer mixture of dipropenyl tin bromide, diisopropenyl tin dibromide, diphenyl tin dichloride, di-p-tolyl tin dichloride and di- α -naphthyl tin dibromide appears to have thus been obtained. This reaction was also investigated in various solvents. A re-

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SOV/62-59-4-11/42
On the Possibility of a Synthesis of Organic Tin Compounds by the Reduction of Organic Thallium Compounds With Salts of Divalent Tin

action of diisopropenyl thallium bromide with tin bromide in acetone can be effected only with difficulty. It does not react in benzene and ligroin solutions even when heated. On the other hand, cis-cis-dipropenyl thallium bromide reacts with tin bromide in benzene at 50° to form dipropenyl tin dibromide and thallium dibromide. This reaction is similar to the reaction investigated (Ref 3) between organo-mercury compounds and divalent tin salts and is effected with relative ease. This reaction can be used as a method of synthesizing organic tin compounds of the type R_2SnX_2 . There are 6 references, 4 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh sovedineniy Akademii nauk SSSR
(Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: July 12, 1957

Card 2/2

5 (3)

AUTHORS: Nesmeyanov, A. N., ~~Borisov, A. Ye.~~, SOV/62-59-6-13/36
Savel'yeva, I. S.

TITLE: Addition of Triethyl Aluminum to Tolan (Prisoyedneniye
triethylaluminiuma k tolanu)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1959, Nr 6, pp 1034 - 1036 (USSR)

ABSTRACT: For the purpose of the addition reaction mentioned in the
title, equimolecular quantities of triethyl aluminum and of
1,2-diphenylacetylenewere together heated up to 100-120°. Both
substances formed the liquid 1,2-diphenylbuten (I) with a boil-
ing point of 108-109°, $n_D^{20} = 1.5965$, yield 40% - and crystal-
line 1,2,3,4-tetraphenyl butadien-1,3 (II) which melts at 90-
91° and at 129-130° (Two stereoisomers). Separation of both
substances could be carried out either chromatographically or
by crystallisation. The configuration of both substances was
determined by plotting the infrared spectra of each isomer and
interpreting them. Characteristic bands were found for the li-
quid and solid isomer of (I), according to which the liquid

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Addition of Triethyl Aluminum to Tolan

SOV/62-59-6-13/36

isomer has a cis- and the solid one a transconfiguration. The three possible isomers of (II) could not be determined by means of the infrared spectrum. In the experimental part the different reactions are described in detail, and in a table the yields in reaction products are compiled. There are 1 table and 4 references, 1 of which is Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Elemental Organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: October 24, 1957

Card 2/2

5 (3)

AUTHORS:

Nesmeyanov, A. N., Borisov, A. Ye.,
Novikova, N. V.

SOV/62-59-7-10/38

TITLE:

Preservation of the Configuration of the Radical in the Metal
Exchanging Reactions of Propenyl Metal Organic Compounds
(Sokhraneniye konfiguratsii radikala v reaktsiyakh obmena
metalla propenil'nykh metalloorganicheskikh soyeineniy)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1959, Nr 7, pp 1216-1224 (USSR)

ABSTRACT:

This paper belongs to a series of investigations on the stereo-
chemical exchange of atoms bound to olefin carbon. The relative
scheme shows that the cis- or transconfiguration of the olefin
radical remains preserved in an electrophilic or homolytic
substitution. As initial materials for the investigations cis-
and trans-1-bromopropene were used. The lithium salts of these
compounds were subjected to a metal exchange. Lithium was
replaced by mercury, thallium or tin. The configuration of the
stereoisomeric lithium propenyl was determined by means of the
infrared absorption spectrum and the configuration of the Hg-,
Tl- and Sn-compounds was determined by means of the infrared
spectrum and according to the method of even and uneven numbers

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Preservation of the Configuration of the Radical in the SOV/62-59-7-10/38
Metal Exchanging Reactions of Propenyl Metal Organic Compounds

of links in the cycles. The investigation of the metal exchange was carried out at room temperature. The metals were exchanged in an electrophilic reaction. A reaction hitherto unknown was noticed: $R_2SnCl_2 + TlCl_2 \longrightarrow R_2TlCl_2 + SnCl_4$. In the experimental part the various exchange reactions are described. There are 7 references, 2 of which are Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute of Elemental Organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: November 12, 1957

Card 2/2

5(3)

AUTHORS: Borisov, A. Ye., Novikova, N. V.

SOV/62-59-9-27/40

TITLE: Exchange Reactions of Organotin Compounds With Thallium (III) Chloride

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1670-1672 (USSR)

ABSTRACT: In the title reaction, the authors previously observed (Ref 1) a smooth transformation of various organotin compounds to organo-thallium compounds. These investigations are continued in the present paper by studying the reaction between tetraethyl-, butyl-, phenyl-, o- and p-tolyl-, o-anisyl, the stereoisomeric propenyl-, isopropenyl-, and vinyl compounds of tin with thallium (III) chloride. The initial substances were obtained by the Grignard reaction, stereoisomeric tetrapropenyl- and isotetrapropenyl tin being prepared for the first time. A representation of the geometric configuration of these compounds is given in accordance with the views of Nesmeyanov and papers by the same author (Ref 1). All compounds reacted smoothly with $TlCl_3$

Card 1/2 in ether or chloroform solution at room temperature. Data of initial substances and reaction products are given in table 1.

Exchange Reactions of Organotin Compounds With
Thallium (III) Chloride

SOV/62-59-9-27/40

The cis- and trans-tetrapropenyl compounds immediately form R_2TlCl , the others form mixtures of R_2TlCl and $RTlCl_2$. The phenyl compounds yield compounds of the latter type only. The tetraethyl and tetrabutyl compounds gave no exchange reaction. Only compounds of the type $Tl_3(TlCl_6)$, as well as ethyltin chloride and butyltin chloride were precipitated. The physical constants of some of the thallium compounds obtained are given in table 2. There are 2 tables and 3 references, 1 of which is Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR
(Institute for Elemental Organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: February 20, 1959

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5.3700

78090

SOV/60-60-1-50/57

AUTHORS: Nesmeyanov, A. N., Borlsov, A. Ye., Novikova, N. V.

TITLE: Letter to the Editor. Geometrical Isomers of Propenyl Compounds of Tri- and Pentavalent Antimony

PERIODICAL: Izvestiya Akademii nauk SSSR, otdeleniye khimicheskikh nauk, 1960, Nr 1, p 147 (USSR)

ABSTRACT: The authors report that during the study of stereochemistry of organometallics, a series of geometrical isomers of propenyl compounds of tri- and pentavalent antimony were synthesized, and that cis- and trans-propyllithium react with antimony trichloride to form corresponding cis- and trans-propylantimony. The reaction between these isomers and halogen lead to the formation of a series of isomers of pentavalent antimony:

$$(CH_3CH=CH)_3SbX + X_2 \rightarrow (CH_3CH=CH)_3SbX_2, X=Cl, Br, I$$

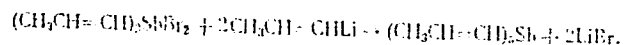
cis- isomers, containing Cl and Br, are crystalline and

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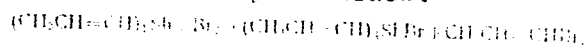
Letter to the Editor. Geometrical isomers
of Propenyl Compounds of Tri- and Penta-
valent Antimony

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SOV/62-60-1-36/37

the trans-isomers are liquids. Liquid geometrical
isomers of pentapropenylantimony were synthesized
from cis- and trans-isomers of tripropenylantimony
dichloride and the corresponding isomers of propenyl-
lithium:



These isomers have different refractive indices and
absorption spectra. They react with bromine, forming
two tetrapropenylantimony bromides:



ASSOCIATION:

There is 1 Soviet reference.
Institute of Element-Organic Compounds, Academy of
Sciences, USSR (Institut elementoorganicheskikh
soyedineniy Akademii nauk SSSR)

SUBMITTED:

October 29, 1959

Card 2/2

5.3/00

78091
SOV/62-60-1-37/37

AUTHORS: Nesmeyanov, A. N., Borisov, A. Ye., Kovredov, A. I.,
Golubeva, Ye. I.

TITLE: Letter to the Editor. Reaction of Free Radicals With
Organomercury Compounds

PERIODICAL: Izvestiya Akademii nauk SSSR, otdeleniye khimicheskikh
nauk, 1960, Nr 1, p 143 (USSR)

ABSTRACT: The authors report that compounds $RHgR'$ react with CCl_4
in the presence of benzoyl peroxide to form compounds
shown in Table B. There are 1 table; and 2 references,
1 U.S. and 1 Soviet. The U.S. reference is: M. S. Kh
Kharasch, R. Marner, J. Am. Chem. Soc., 48, 3130 (1926).
ASSOCIATION: Institute of Element-Organic Compounds, Academy of
Sciences, USSR (Institut elementarnoorganicheskikh
soyedineniy Akademii nauk SSSR)

SUBMITTED: October 29, 1959

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Letter to the Editor. Reaction of Free
Radicals With Organomercury Compounds

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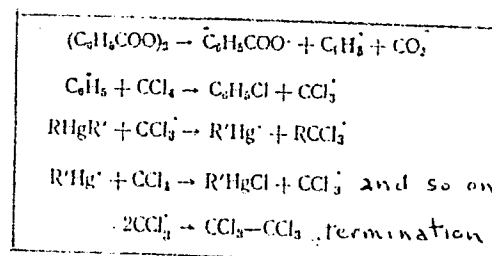


Table A

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REACT TO THE EDITOR: Reaction of Free
Radicals With Organomercury Compounds

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SOV/62-60-1-37/31

(a)	(b)	(c)
$C_6H_5HgC_6H_5$	(d)	$C_6H_5HgCl(87\%) + C_6H_5CCl_3$
$C_6H_5CH_2HgC_6H_5$	(d)	$C_6H_5CH_2HgCl(73\%) + C_6H_5CCl_3(58\%)$
$C_6H_5HgC_6H_4$	(d)	$C_6H_5HgCl(76\%) + C_6H_5CCl_3(72\%)$
$C_6H_5HgC_6H_{11}$	(e)	$C_6H_{11}HgCl(83\%) + C_6H_5CCl_3(43\%)$
$C_6H_5HgCH_2C_6H_5$	59-61°	
$C_6H_5HgC_6H_4CH_3$	(d)	$C_6H_5CH_2HgCl(73\%) + C_6H_5CCl_3(33\%)$
$p-CH_3C_6H_4HgC_6H_4CH_3$	(e)	$C_6H_5HgCl(88\%) + p-CH_3C_6H_4CCl_3(82\%)$
$p-CH_3C_6H_4HgC_6H_4CH_3$	167-192°	
$C_6H_5HgC_{10}H_7$	(e)	$o-CH_3C_6H_4HgCl(57\%) + o-CH_3C_6H_4CCl_3(40\%) +$ $+ p-CH_3C_6H_4HgCl(43\%) + p-CH_3C_6H_4CCl_3(60\%)$
	159-189°	
	(e)	$C_6H_5HgCl(73\%) + C_{10}H_7CCl_3(73\%)$
	165-195°	

Key to Table B. (a) starting compounds; (b) constants;
(c) products of reaction (yield %); (d) oil; (e) mp.

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NESMEYANOV, A.N.; BORISOV, A.Ye.; NOVIKOVA, N.V.

Vinyl compounds of tri- and pentavalent antimony. Izv. AN SSSR
Otd.khim.nauk no.5:952 M '60. (MIRA 13:6)

1. Institut elementoorganicheskikh soedineniy Akademii nauk SSSR.
(Antimony compounds) (Vinyl compounds)

NESMEYANOV, A.N., akad.; BORISOV, A.Ye.; NOVIKOVA, N.V.

Atomic refraction of antimony. Dokl. AN SSSR 134 no.1:100-101
S '60. (MIRA 13:8)

1. Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR.
(Antimony compounds)
(Mercury compounds)
(Arsenic compounds)

NESMEYANOV, A.N.; BORISOV, A.Ye.; NOVIKOVA, N.V.

Propenyl stereoisomers of tri- and pentavalent antimony. Izv.AN
SSSR Otd.khim.nauk no.4:612-617 Ap '61. (MIRA 14:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Antimony compounds)

NESMEYANOV, A.N.; BORISOV, A.Ye.; SAVEL'YEVA, I.S.; KRUGLOVA, N.V.

Series of radicals arranged according to the rate at which they
are split off a mercury atom by hydrochloric acid. Izv. AN SSSR
Otd.khim.nauk no.4:726-727 Ap '61. (MIRA 14:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Radicals (Chemistry))

NESMEYANOV, A.N.; BORISOV, A.Ye.; NOVIKOVA, N.V.

Compounds of the type $(RCH CR')_3Sb(C_2H_5)_2$. Izv.AN SSSR Otd.khim.
nauk no.4:730 Ap '61. (MIRA 14:4)

1. Institut elementoorganicheskikh soedineniy AN SSSR.
(Antimony compounds)

BORISOV, A.Ye.

Cis-trans-dipropenylmercury. Izv.AN SSSR, Otd.khim.nauk no.6:
1036-1038 Je '61. (MIRA 14:6)

1. Institut elementoorganicheskikh sovedineniy AN SSSR.
(Mercury organic compounds)

BORISOV, A.Ye.; OSIPOVA, M.A.

Reaction of asymmetric organomercury compounds with thallium trichloride. Izv.AN SSSR, Otd.khim.nauk no.6:1039-1042 Je '61.
(MIRA 14:6)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Mercury organic compounds) (Thallium chlorides)

NESMEYANOV, A.N.; BORISOV, A.Ye.; SAVEL'YEVA, I.S.; OSIPOVA, M.A.

Products of the addition of mercury salts to disubstituted
acetylenes. Izv. AN SSSR. Otd.khim.nauk no.7:1249-1252 J1 :61.
(MIRA 14:7)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.
(Acetylene) (Mercury salts)

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S/062/61/000/009/001/014
B117/B101

AUTHORS: Nesmeyanov, A. N., Borisov, A. Ye., and Novikova, N. V.

TITLE: Isopropenyl and vinyl compounds of tri- and pentavalent antimony

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 9, 1961, 1578-1582

TEXT: Isopropenyl and vinyl derivatives of antimony of the types R_3Sb , R_5Sb , R_4SbX , R_3SbX_2 ; where $R = \underset{\text{CH}_3}{\text{CH}_2=\text{C}-}$, $\text{CH}_2=\text{CH}-$; $X = \text{Cl}, \text{Br}, \text{I}$, were

synthesized in the present work. The authors had previously prepared cis- and trans propenyl derivatives of tri- and pentavalent antimony (Ref. 1: Izv. AN SSSR. Otd. khim. n., 1960, 147) and pentavinyl antimony (Ref. 2: Izv. AN SSSR. Otd. khim. n., 1960, 952). Triisopropenyl antimony ($\text{C}_9\text{H}_{15}\text{Sb}$) and trivinyl antimony ($\text{C}_6\text{H}_9\text{Sb}$) were obtained by reaction of antimony trichloride with isopropenyl lithium, or vinyl magnesium bromide,

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Isopropenyl and vinyl compounds ...

respectively. The compounds thus obtained react readily with halogens, forming derivatives of pentavalent antimony: $R_3Sb + X_2 \rightarrow R_3SbX_2$. Triisopropenyl antimony dibromide ($C_9H_{15}SbBr_2$), a white crystalline substance, m.p. $138^\circ C$, reacts with isopropenyl lithium to give penta-isopropenyl antimony ($C_{15}H_{25}Sb$), a white amorphous substance, m.p. $60^\circ C$. Treatment of trivinyl antimony dibromide ($C_6H_9SbBr_2$, $n_D^{20} 1.6480$) with vinyl magnesium bromide leads to pentavinyl antimony ($C_{10}H_{15}Sb$), a slightly greenish liquid. Quantitative analysis showed that both pentaalkenyl antimony compounds were sufficiently pure. By treating these compounds dissolved in $CHCl_3$ with equimolecular quantities of bromine at $-5^\circ C$, the authors obtained tetraisopropenyl stibonium bromide ($C_{12}H_{20}SbBr$, leaf-shaped shiny crystals, m.p. $125-135^\circ C$) and tetravinyl stibonium bromide ($C_8H_{12}SbBr$, needle-shaped crystals, m.p. $53-54^\circ C$), respectively. Treatment with equimolar quantities of iodine at room temperature tetraisopropenyl stibonium iodine ($C_{12}H_{20}SbI$, m.p. $163-164^\circ C$) and, respectively, tetravinyl

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S/062/61/000/009/001/014

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Isopropenyl and vinyl compounds ...

stibonium iodine ($C_8H_{12}SbI$, m.p. 68-70°C) in crystalline form. On heating on an oil bath at 180°C, penta-isopropenyl and pentavinyl antimony form triisopropenyl antimony and trivinyl antimony, respectively. This was confirmed by bromination of the triisopropenyl antimony obtained, respectively distillation of the trivinyl antimony, which in the former case yielded triisopropenyl antimony dibromide, m.p. 137-138°C, and in the latter a colorless liquid, n_D^{20} 1.5595, which was identical with trivinyl antimony. Trivinyl and triisopropenyl antimony react with thallium trichloride to give trivinyl antimony dichloride ($C_6H_9SbCl_2$, liquid) and triisopropenyl antimony dichloride ($C_9H_{15}SbCl_2$, white crystals, m.p. 102-103°C). In this reaction thallium is transformed to the monochloride. There are 3 references: 2 Soviet and 1 non-Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Elemental Organic Compounds of the Academy of Sciences USSR)

SUBMITTED: February 15, 1961
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S/062/61/000/009/002/014

B117/B101

AUTHORS: Nesmeyanov, A. N., Borisov, A. Ye., Golubeva, Ye. I., and Kovredov, A. I.

TITLE: Reaction of free radicals with unsymmetric organic mercury compounds

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 9, 1961, 1582-1589

TEXT: The authors studied the interaction of free radicals with a number of asymmetric saturated organo-mercury compounds with a view to elucidating the order in which radicals are split off by a radical reagent and establishing a sequence of radicals. The benzoyl peroxide initiated reaction of carbon tetrachloride with saturated organo-mercury compounds, discovered by A. Ye. Borisov (Ref. 8: Izv. AN SSSR. Otd. khim. n. 1951, 524) was used as example for this study. The mercury compounds used were of the type $RHgR'$ listed in the table. They were prepared either (compounds 11, 12, 13, and 14) by the method developed by R. Kh. Freydlina, K. A. Kocheshkov, and A. N. Nesmeyanov (Ref. 9: Zh. obshch.

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